FFI Forsvarets forskningsinstitutt

NORMANS – A small nations approach to an integrated soldier system – focus on C4I

Mr Rune Lausund
Chief Scientist
FFI

ISSC 2005
Boston 13.12 – 16.12

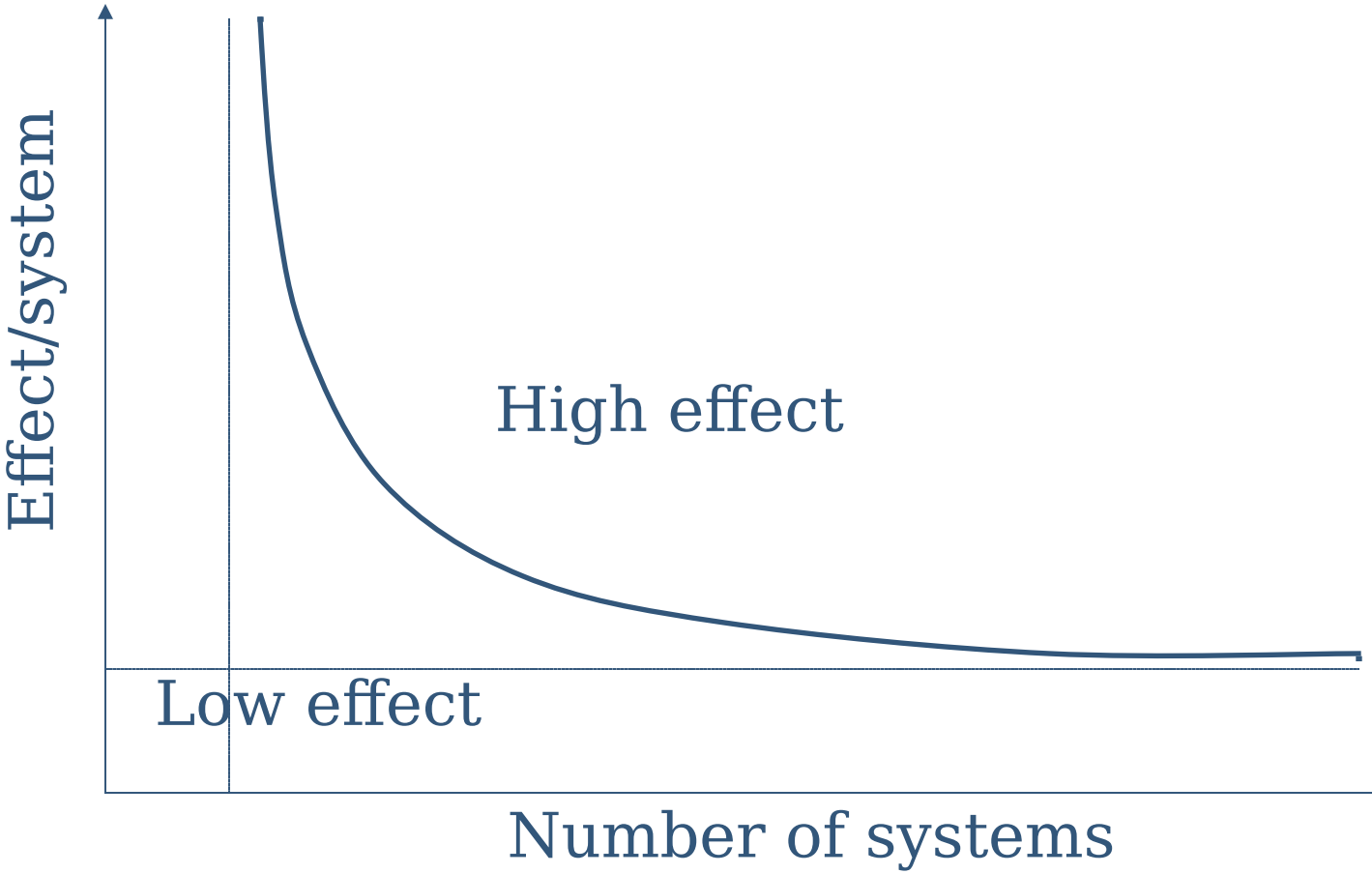
NORMANS at Soldier Technology

- **Presentations ISSC 2001 (Bath UK)**
  - The Norwegian soldier modernisation programme. Mr Rune Lausund
  - Combat clothing under wet and cold conditions. Mr Svein Martini
  - Adapting commercial Wireless LAN for tactical military use. Mr Svein Haavik
- **This years presentation**
  - NORMANS – A small nations approach to an integrated soldier system – Overview and focus on Norwegian R&D in the Soldiers C4I system. Mr Rune Lausund
  - Clothing and Protection in the Norwegian Soldier Modernisation Program, NORMANS. Mr Svein Martini

The presentation will cover

- A small nations dilemma
- NORMANS – the concept
- NORMANS research in the C4I area
- NORMANS focus on international standardization

Small nations technology dilemma



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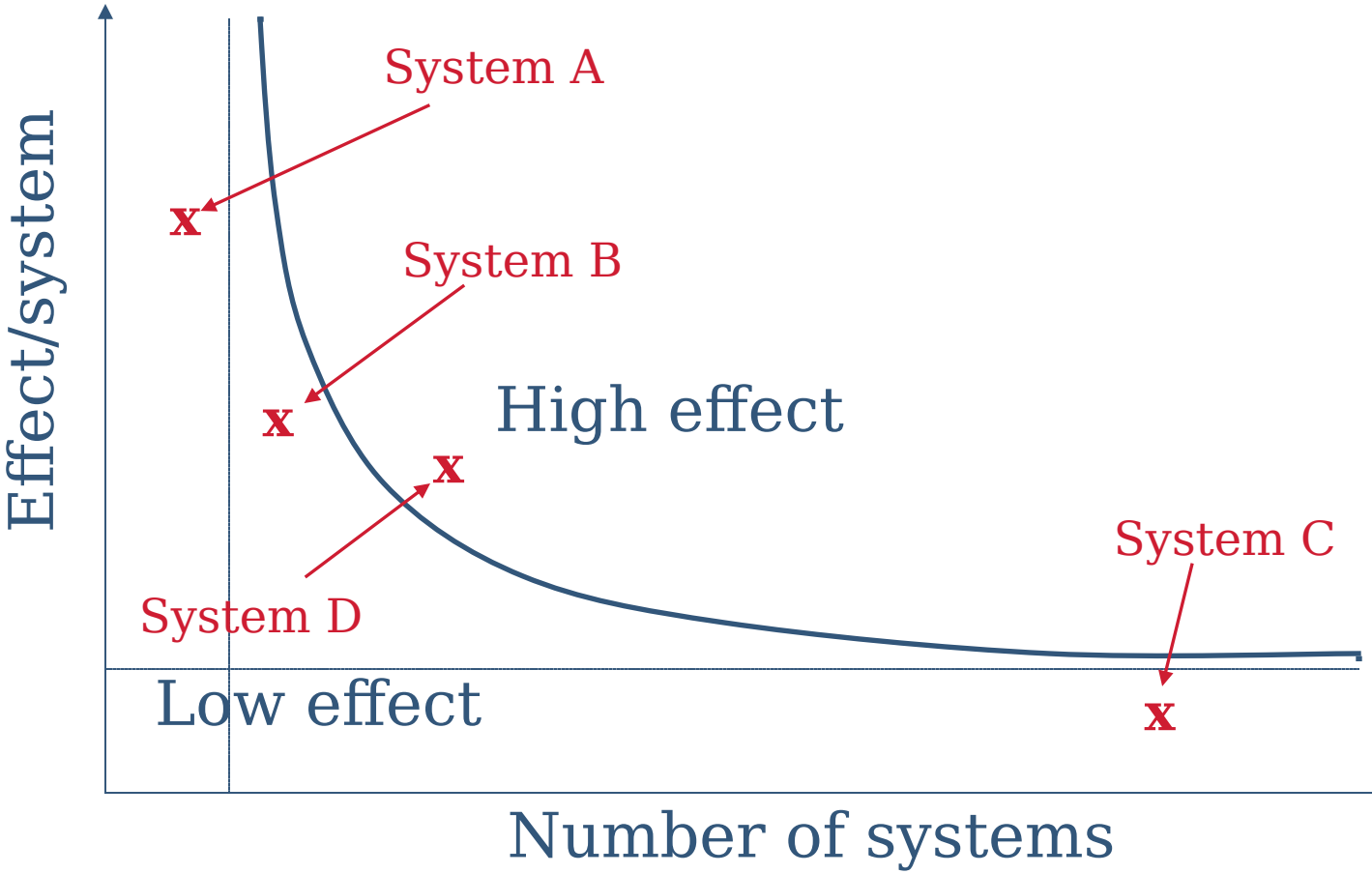
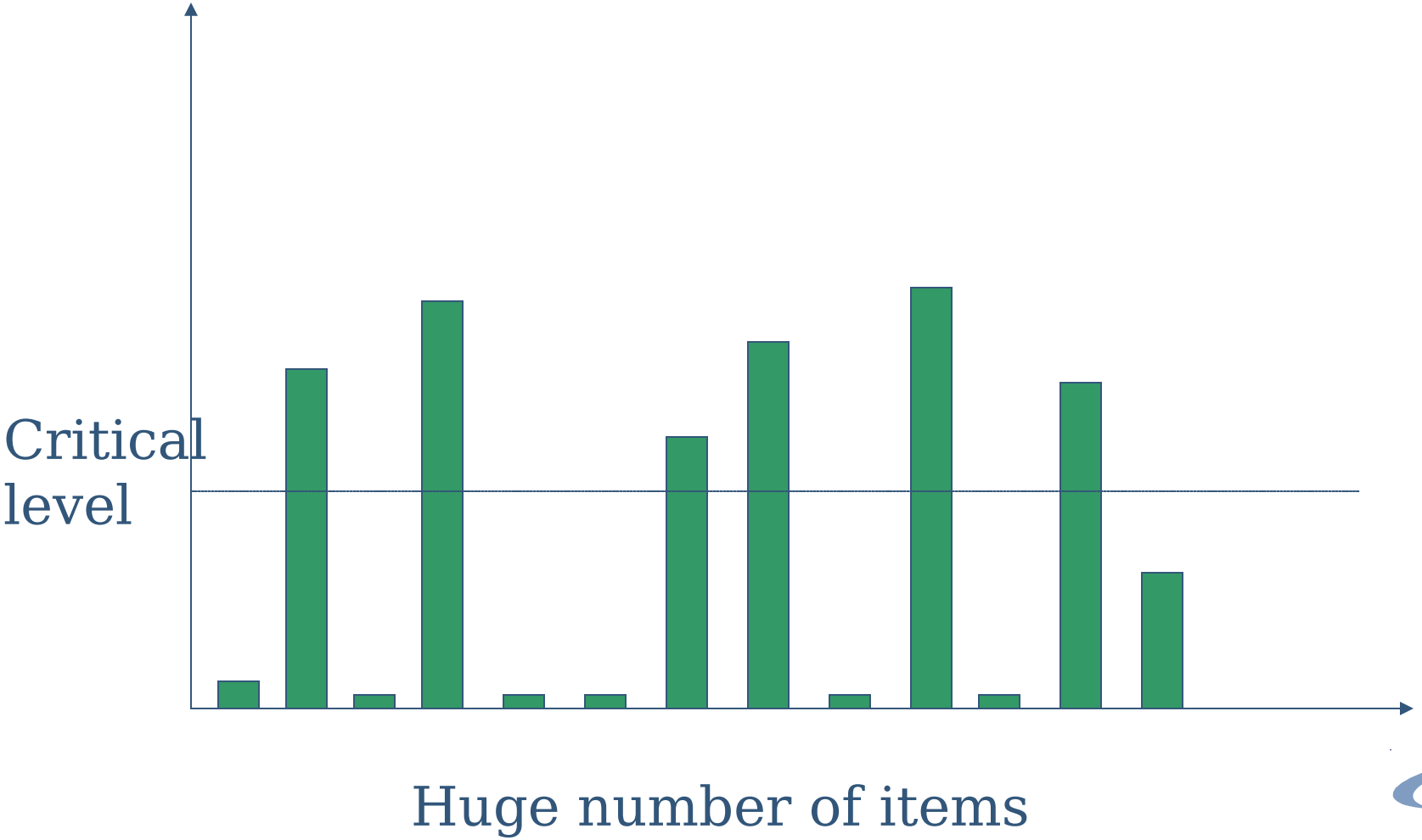
Small nations technology dilemma



Small nations need to focus



Small nations need to

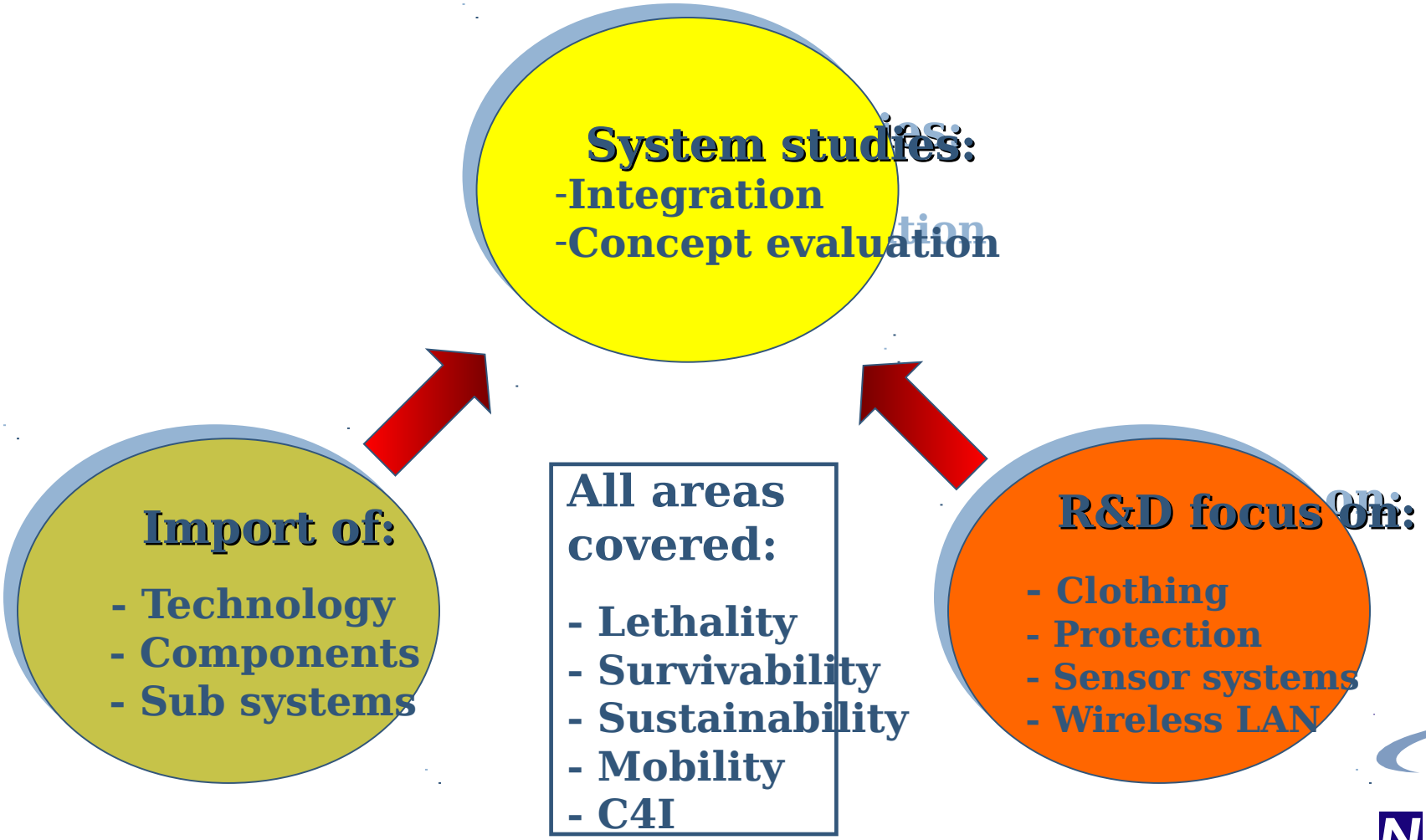
- be an knowledgeable customer that picks technology in an international marked
- be able to integrate new technology with legacy equipment
- undertake technological upgrades without changing the system
  - Need for a long lasting architecture
- use adaptable systems
- focus on international interoperability

NORMANS – The concept

- NORMANS
  - NORwegian Modular Arctic Network Soldier

- Norwegian
  - National integration based on international solutions

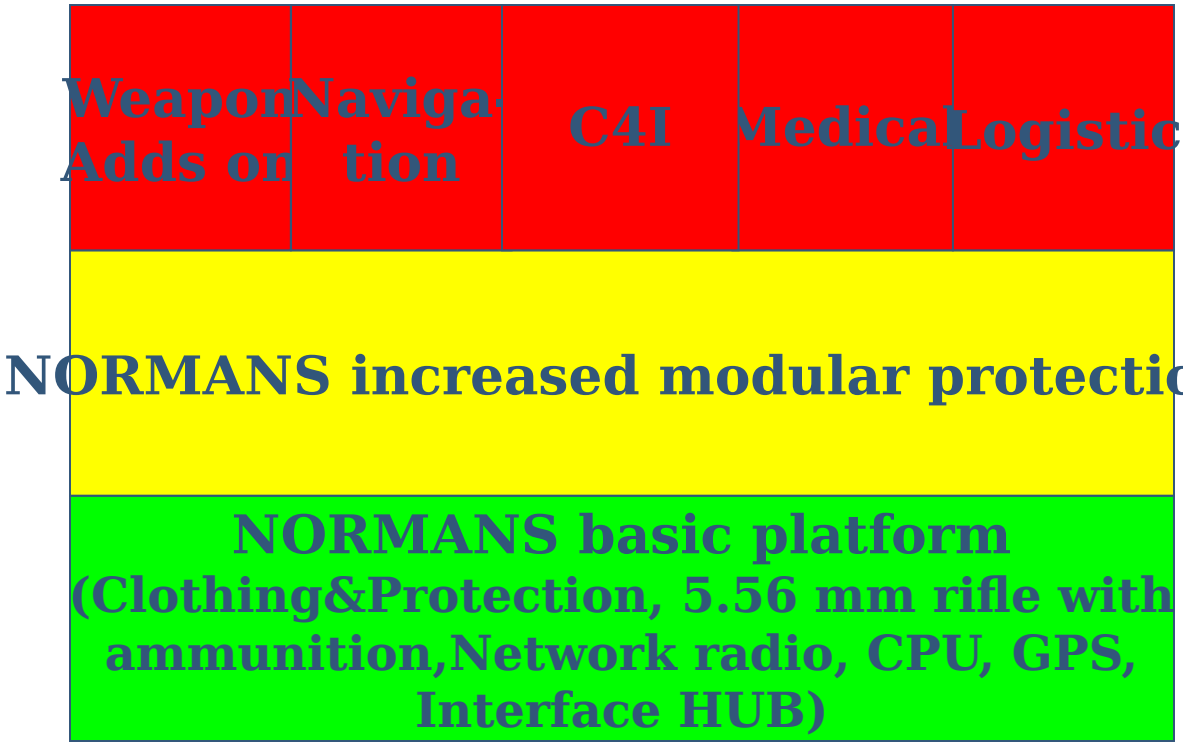
NORMANS Philosophy
NORwegian – National integration based on international solutions



NORMANS – The concept

- NORMANS
  - NORwegian Modular Arctic Network Soldier
- Norwegian
  - National integration based on international solutions
- Modular
  - We need to establish several soldier categories based on the same platform

Modularity and flexibility
NORMANS conceptual idea



Enable several soldier categories established on the same ”platform”

Requires well defined interface standards

Enables technological upgrading

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  - The future soldier will be an integrated part of the NCW system

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- Network
  - The future soldier will be an integrated part of the NCW system
- Soldier
  - ***Never forget the human factors!!!***

The C4I concept for the soldier

(Command, control, computer, communication and intelligence)

The soldier in a NCW concept

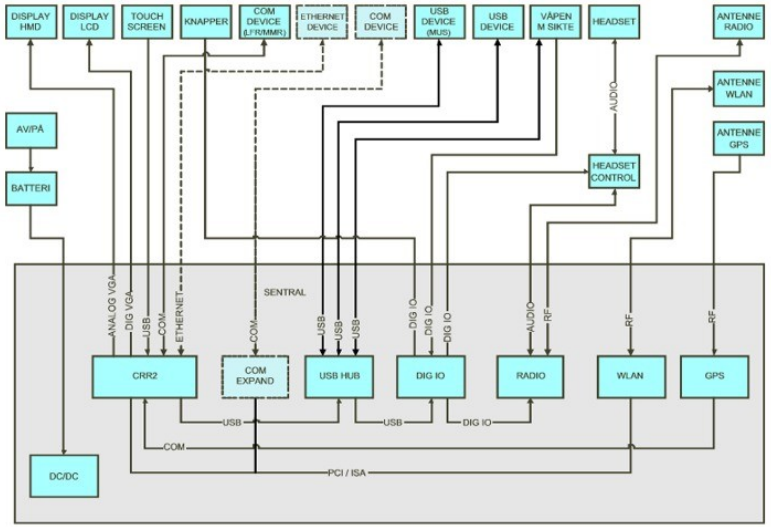
- has more responsibility and more influence
- needs better situational awareness
- needs tools for decision support

NORMANS 0.2 implementation of the C4I requirements through:

- digital maps with own and other positions
- voice radio
- text messages, sms
- picture messages, mms
- sensor control
- other decision support: planning, risk minimizing
- interoperability with other nations

The NORMANS 0.2 test platform

Central Unit Hardware and interfac



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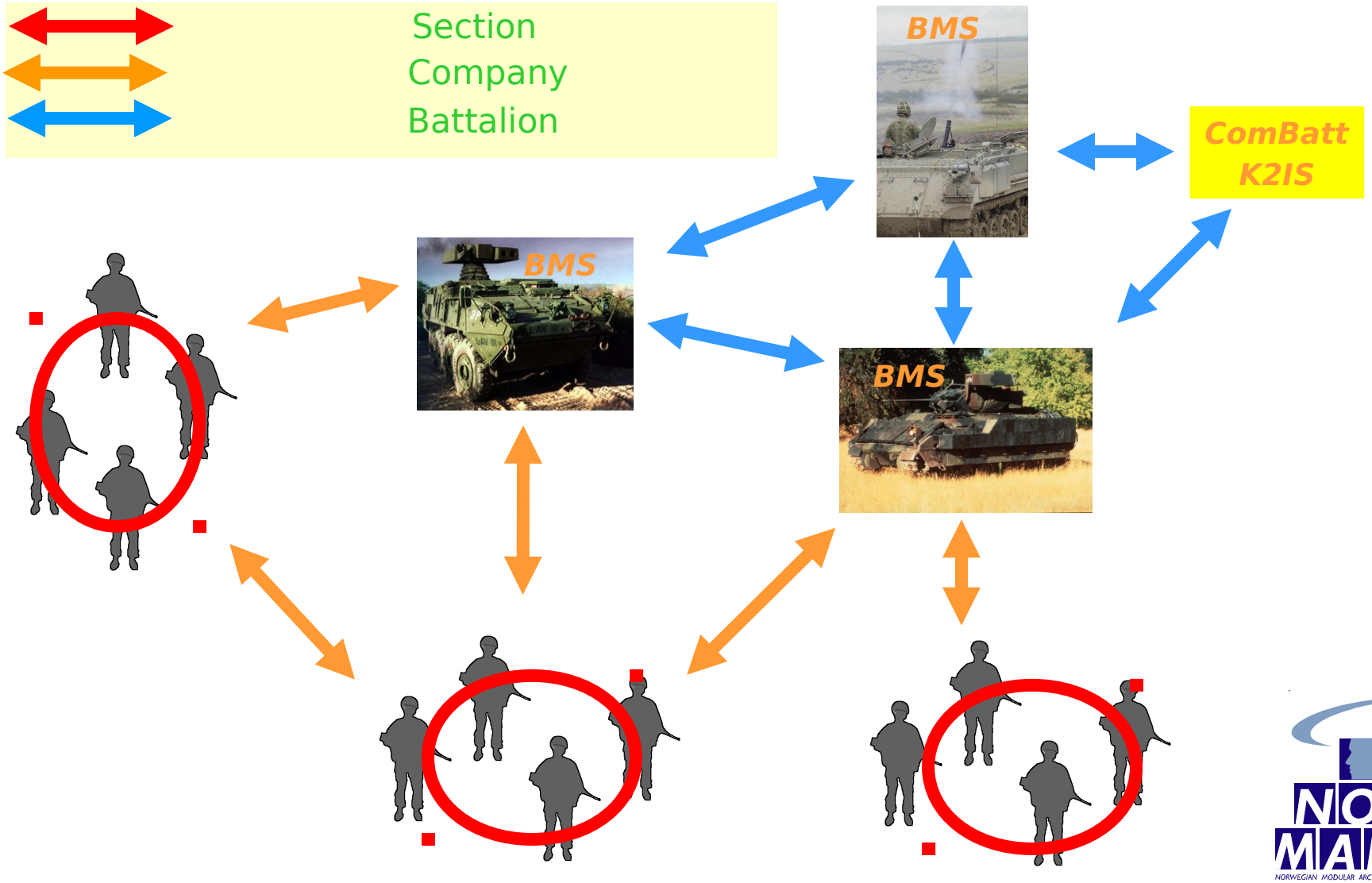
NORMANS research in the C4I area - Communication

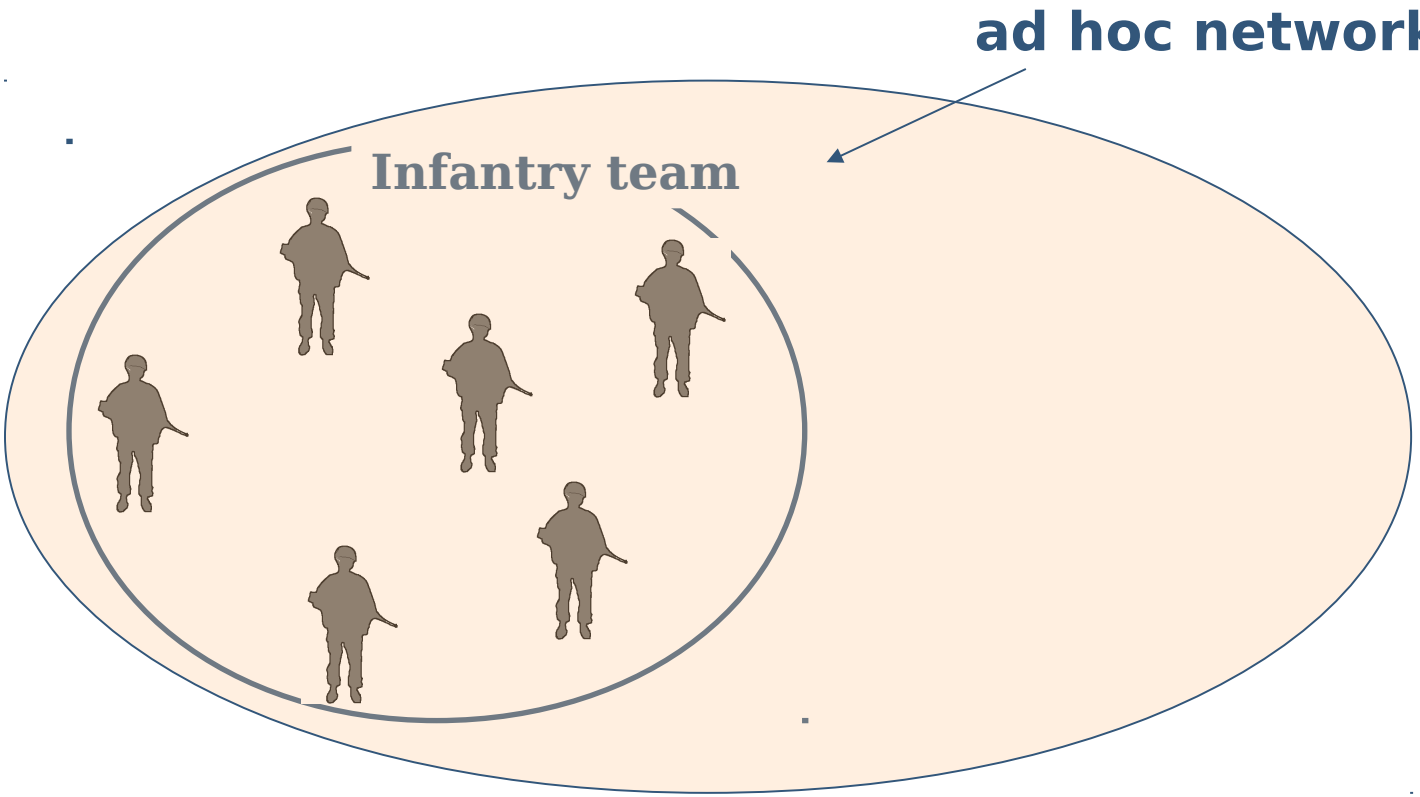
- NORMANS R&D studies include
  - Digital voice and data transmission
  - The use of hearing protection with a hands free radio
  - The use of ad hoc networking
  - Security related problems
  - System requirements for communication bandwidth
  - The information architecture
  - The need for flexibility – communication bearer independency

Seamless communication within a Network Enabled Structure



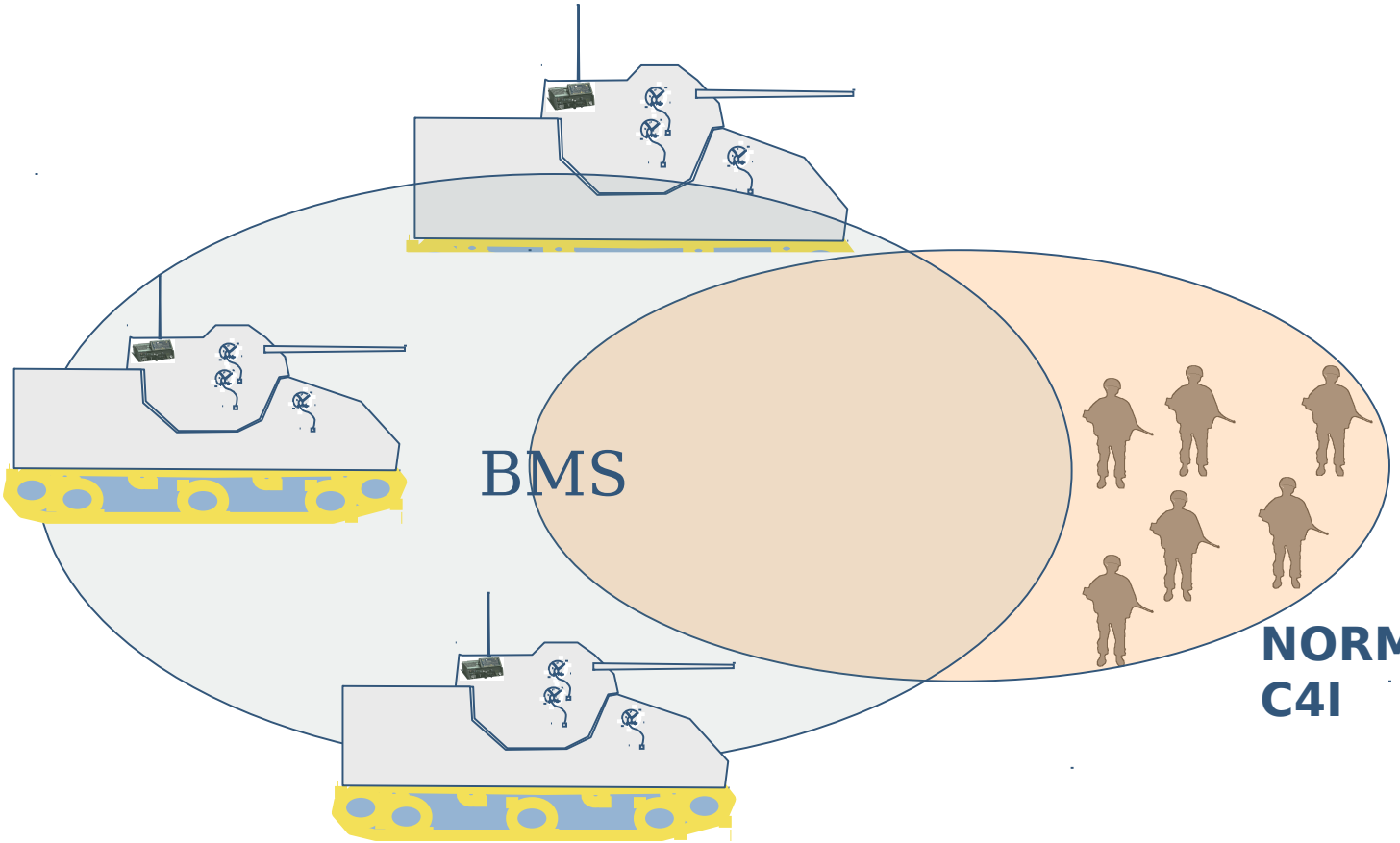
Communication a key to success
NORMANS testing UHF IEEE 802.11b

Test & Demonstration period: Februar – July 2005

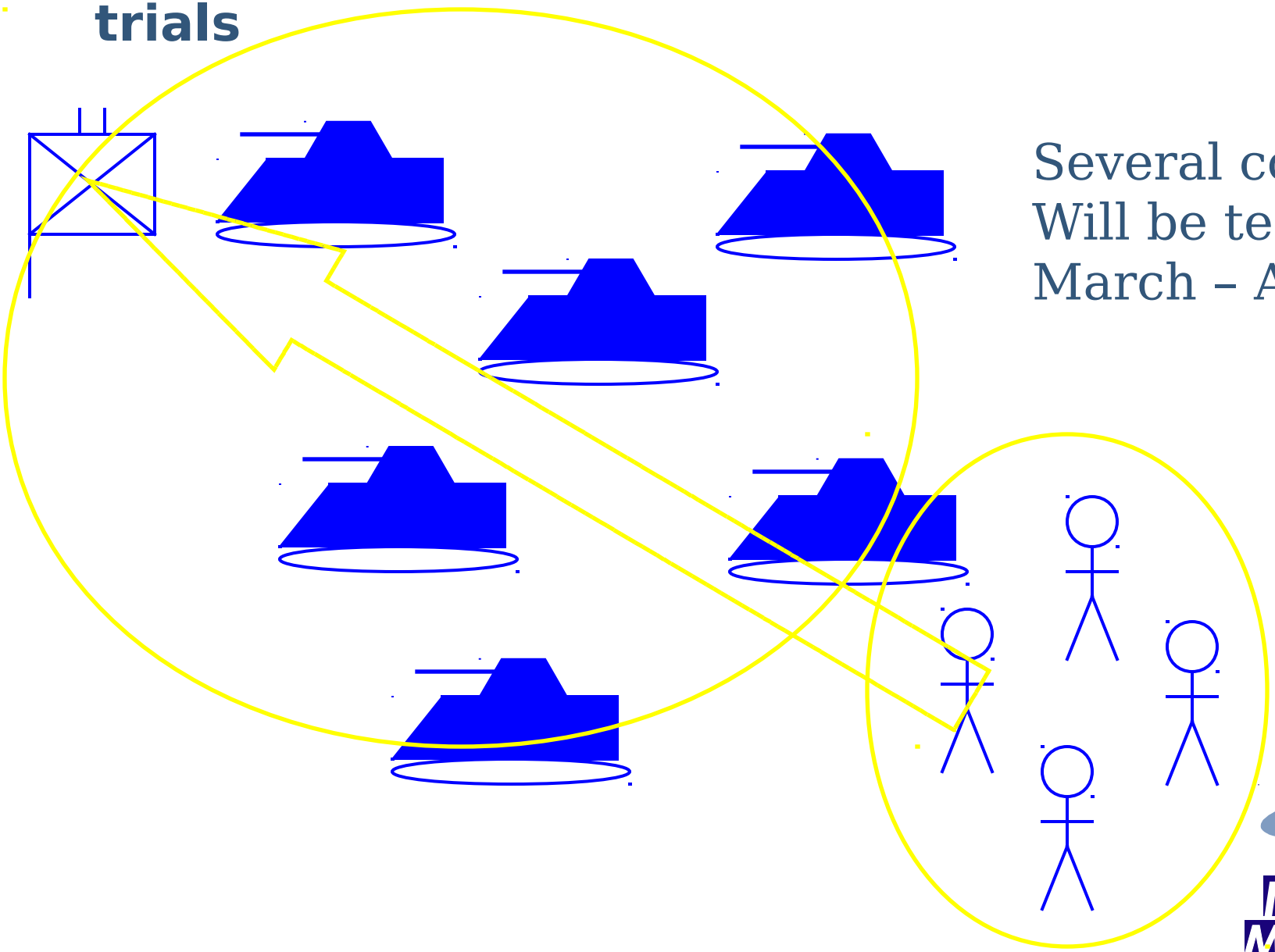


NORMANS seamless linked to future BMS system

Included in the planned test program



Test set up: NORMANS Communication trials

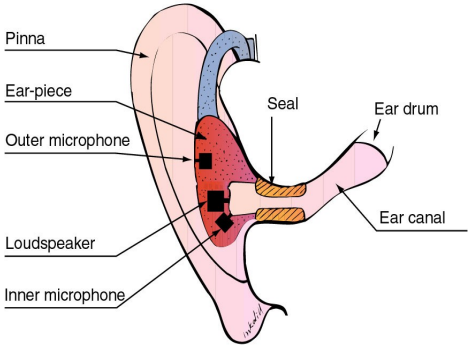


Several concepts
Will be tested
March – Aug -05

NORMANS research in the C4I area

The use of hearing protection with a hands free radio

QUIETPRO is an
all-in-the-ear
intelligent hearing protector
and audio interface
for communication systems



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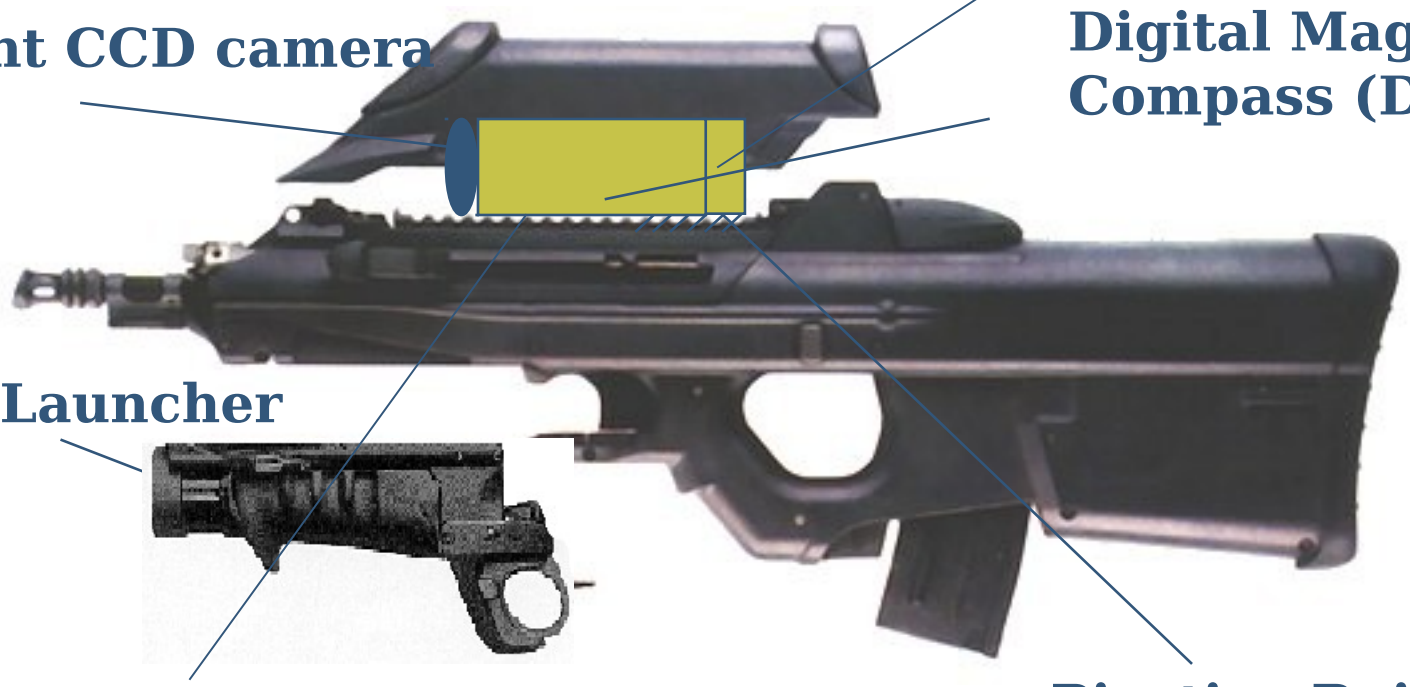
NORMANS research in the C4I area - focus on integration

The sight/sensor integration



NORMANS research in the C4I area - focus on integration

Vingsight as an example

Control buttons on the weapon
is used to

- operate the Vingsight
- control the sms and mms application
- control the voice radio(s)
- control other sensors linked to the system
- read messages and GIS information

Weapon connection via US

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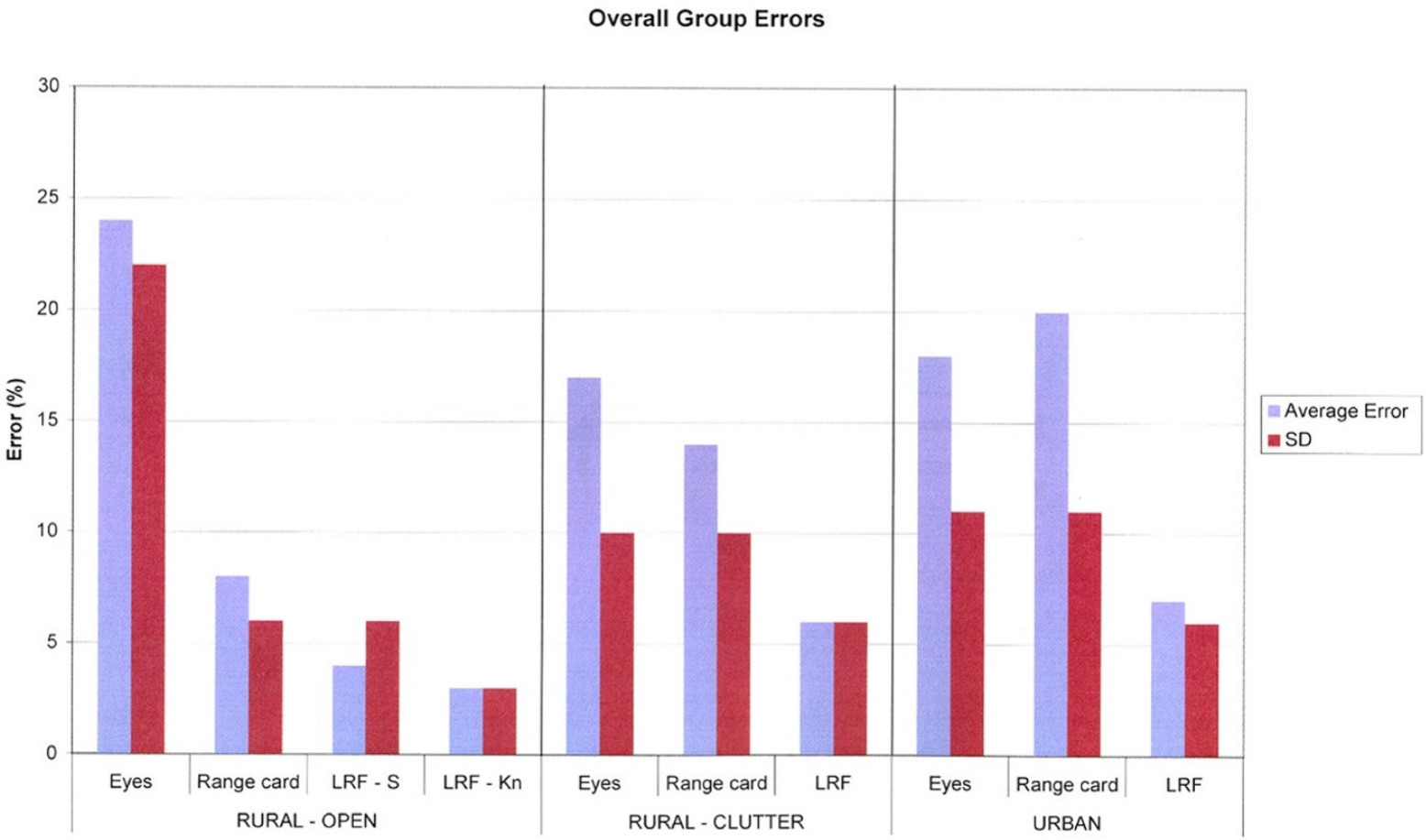
NORMANS R&D study of the hit accuracy for 40 mm grenade launcher

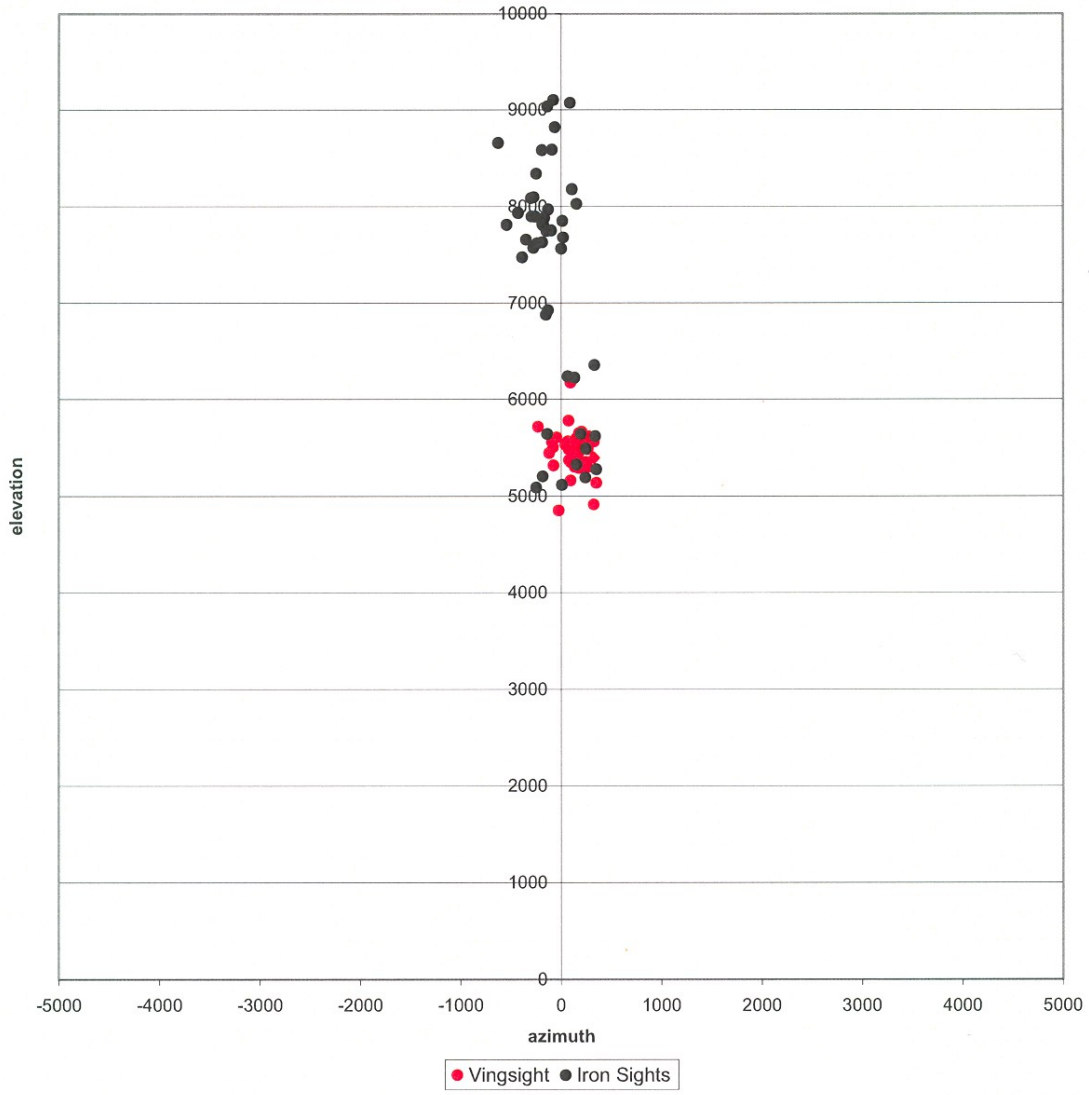
- Ongoing studies by FFI and SDE
  - Range estimation in several terrains
  - The shooters ability to use different sighting system
    - Comparison of iron sight and Vingsight
  - Analyses of error budget, hit accuracy and kill probability
  - Hit probability trials

Range estimation in several terrains



Comparing iron sight and Vingsight.

75 m fixed range



NORMANS R&D – focus on international interoperability

- Interoperability is crucial for small nations – NORMANS focus on C4I and Architecture
- TG/1 C4I:
  - The experimental program
  - The establishment of STANAGs, ”STANdard AGreements”

- Norway has prioritised on participation in the C4I-experimental program

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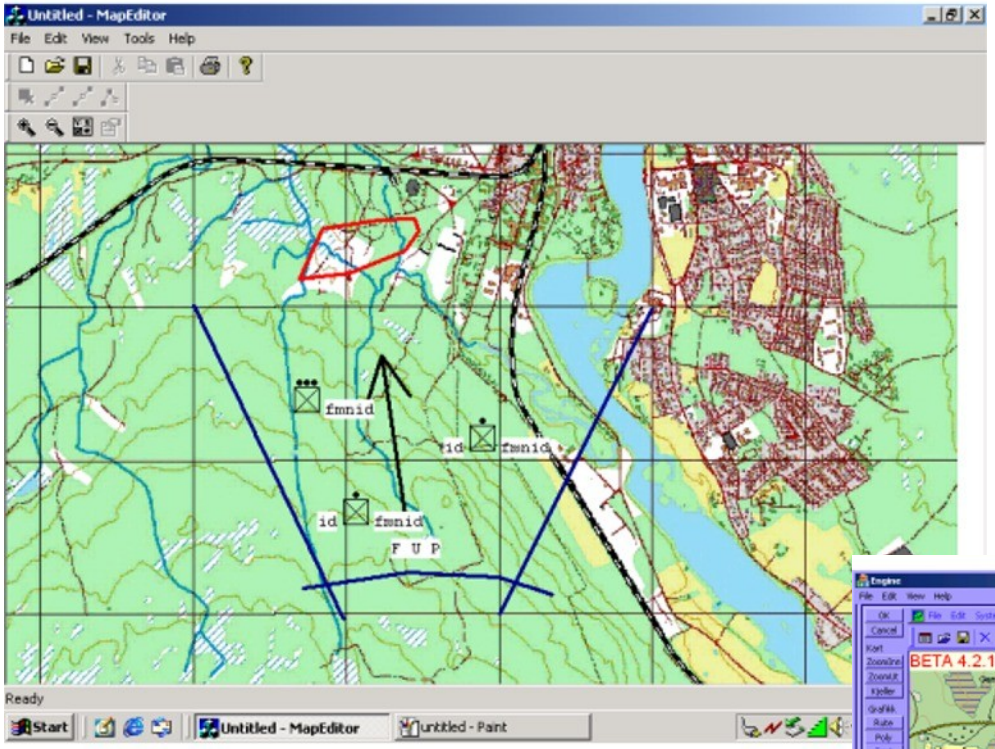
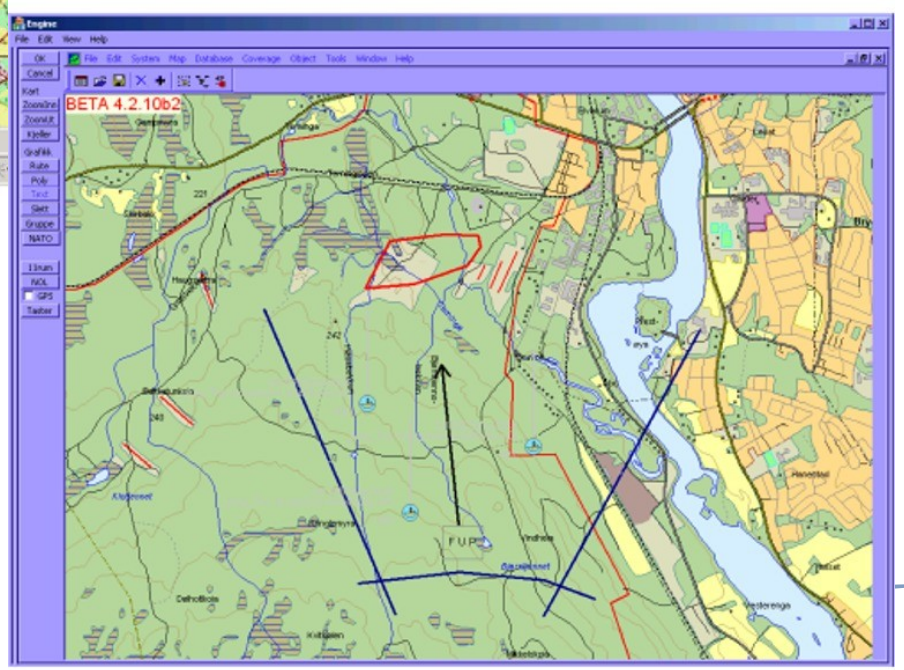
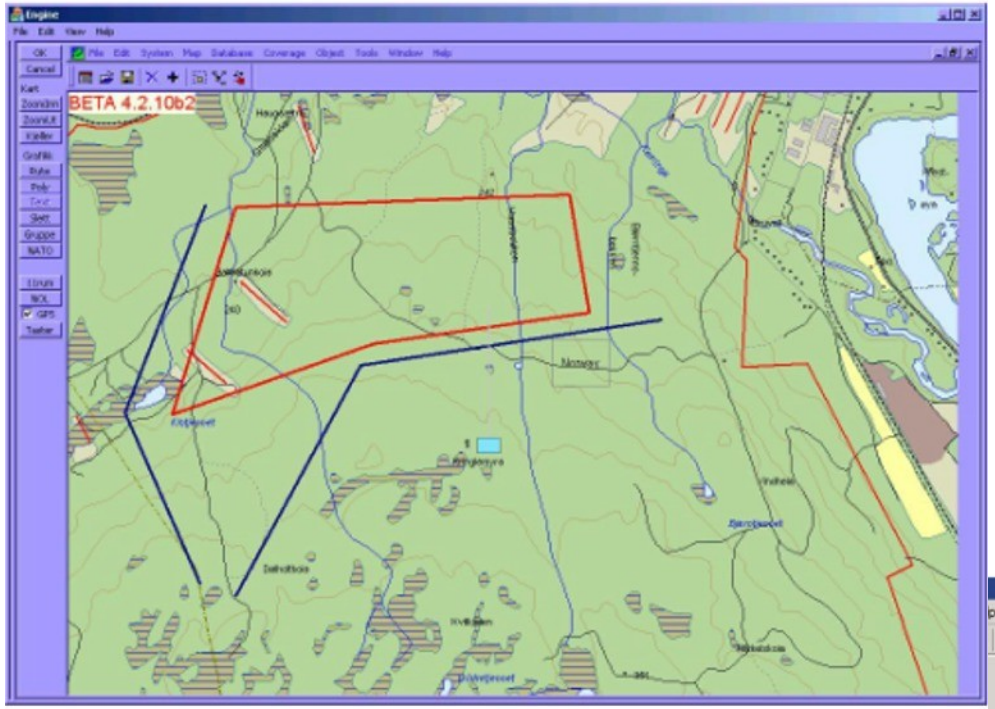


NORMANS C4I



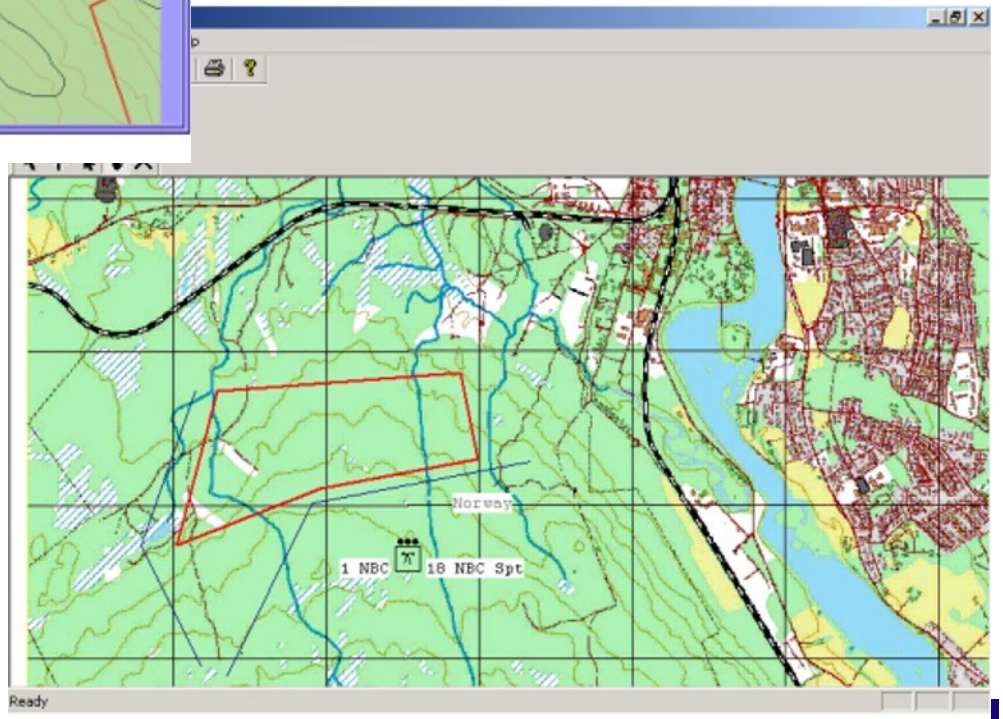
UK C4I system

Information exchange through a NATO defined protocol



Norway

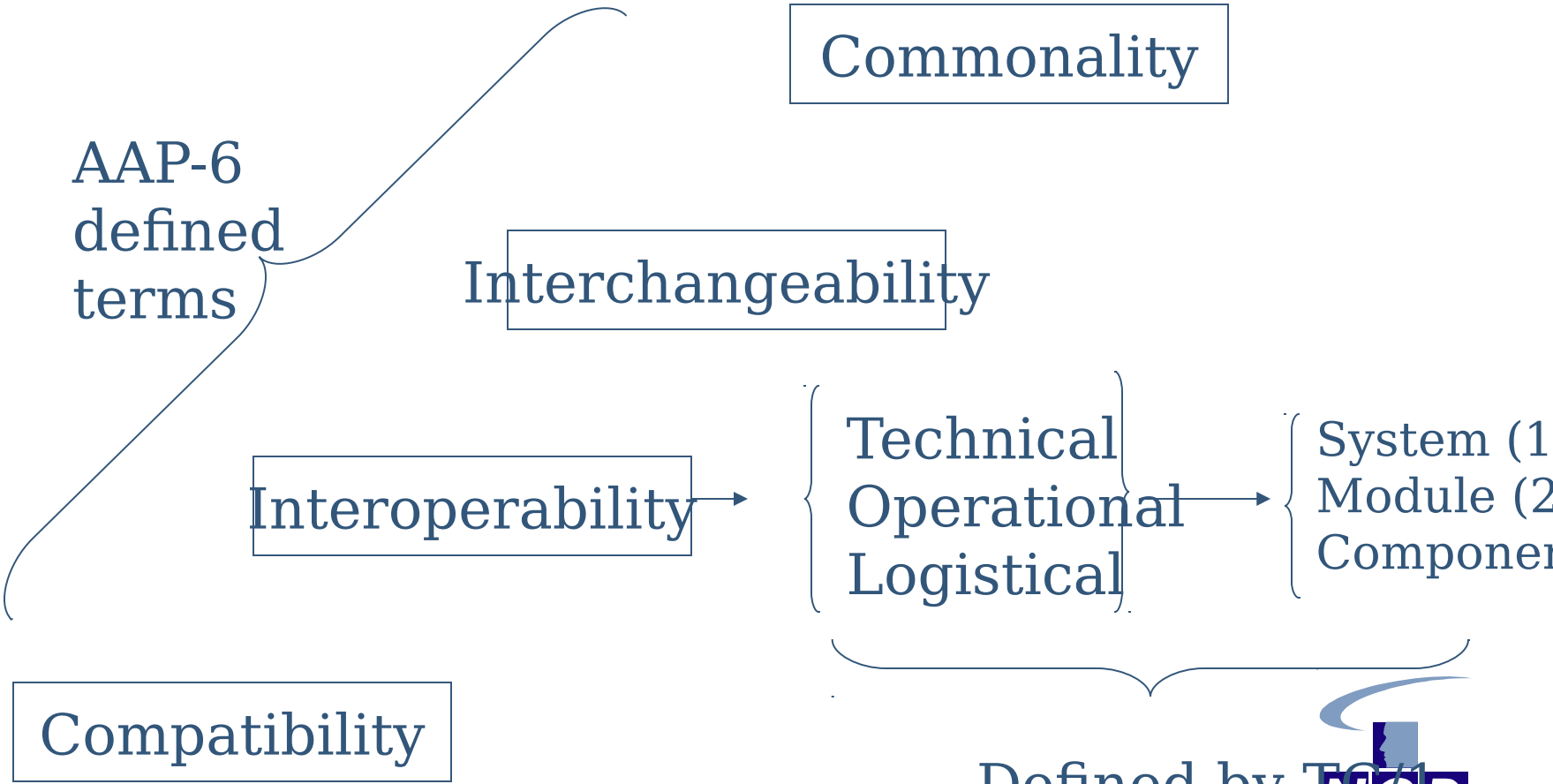
UK



Reverse test

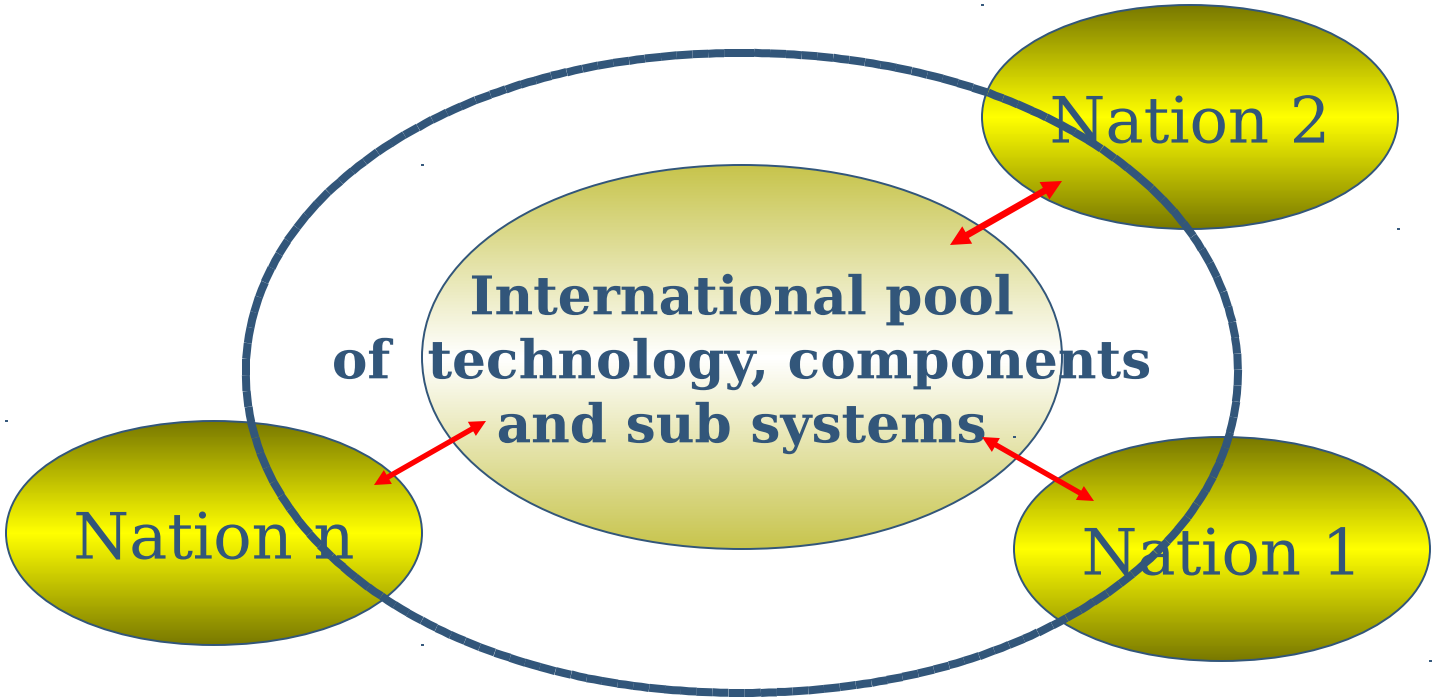
Norway sends map information to UK

TG/1 is focusing on "The system of standardization levels"



As a small nation we push on towards standardization on interfaces

The NORMANS philosophy is based on standardization (level 1 and 2)



NORMANS a concept for a future NCW enabled soldi